INTERNATIONAL CONFERENCE ON EDUCATION, TECHNOLOGY, AND SCIENCE

Improving the Quality of Education to Face the Impact of Technology

Universitas Muhammadiyah Purwokerto

December 28th, 2013

P R O C E E D I N G

ISBN 978-602-14930-0-7

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Proceedings of International Conference
On Education, Technology and Science 2013
Purwokerto, December 28th, 2013

DEVELOPMENT OF SURV-TB (TUBERCULOSIS SURVEILLANCE WEBGIS)

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Abstract

Since 800SM, tuberculosis disease has been found, but it is still be a problem in the world, thus the United Nations (UN) decided tuberculosis eradication is part of Millennium Development Goals (MDGs). Strategy of Directly Observed Treatment Short-course (DOTS) have been made to achieve program indicators successfully, the indicators were such as suspects catching and cases discovery (Case Detection Rate/CDR). The development of Tuberculosis Surveillance WebGIS (TB-Surv) can support the DOTS.

This research used qualitative research methods approach and the study design used a combined approach between SDLC-prototype, where it is consists of existing systems evaluation, defining a new system requirements, designing the system based on the needs of end user identification and the development/prototype development. The research used the secondary and primary data via the interviews and confirmation. The system is tested to recording and reporting officer at the health department to get input for the perfection of the system.

The development of databases, software, data management menu interface, the web-based services access and geographic information systems has been performed by free software for the public accessibility. The TB-Surv will useful to speed up the recording and reporting of tuberculosis diseases, furthermore the spatial analysis image is expected to be an alternative information to make the decision. In addition, TB-Surv systems have facilities to summarize reports plus displaying a suspects catching and CDR indicators by graphic.

Keywords: *Surv-TB, tuberculosis surveillans, webgis*

BACKGROUND

Tuberculosis disease has been known since 8000SM, but the number of cases of pulmonary tuberculosis increased and many of them have not been cured, so the World Health Organization (WHO) in 1993 determined a tuberculosis as a global emergency (Depkes, 2008). United Nations (UN) determine 8 (eight) Millennium Development Goals (MDGs) in 2015, one of them is combating the spread of HIV/AIDS and other diseases, including Tuberculosis disease (Bappenas, 2010).

DOTS strategy has a primary focus of the discovery and cure of patients with the type of infections priority of tuberculosis patients. Finding and healing effort of patient is the best way in efforts to prevent the tuberculosis (Depkes, 2008). Case-finding activities consist of netting suspected, diagnosis, determination of classification and types of disease. The discovery of new patients with positive BTA of tuberculosis subsequently used as indicators to assess the progress and success of national tuberculosis countermeasures (Depkes, 2008). Indicators of a sucsessfull response to tuberculosis countermeasures, among other suspected crawl rate and case detection rate (Case Detection Rate/CDR) (Depkes, 2008).

Health Ministry of Indonesia determined a magnitude indicator of national CDR which was 70%. The report of Indonesia health profile in 2009 tells that the lowest achievement of CDR is the Central Kalimantan province (30.6%) and the highest in the of North Sulawesi Province (85.2%), Whereas the other regions around them including the Central Java with CDR achievement in 2009 was 48%.

Health profile mentions states that the achievement of Case Detection Rate (CDR) in Central Java from the year 2005-2009 as follows: 2005 (50.92%), 2006 (49.82%), 2007 (47.45%), 2008 (47.97%), and 2009 (48.1%). The data showed that the Central Java Province was still remains a part of the priority to eradicate the disease.

Surveillance activities is short term (observation and prediction) and long activities (evaluation). In making observations can be linked in the management of tuberculosis in which area-based management should pay attention at 2 activities, of risk factors management, both of them which must be done simultaneously and backed by

good surveillance. In addition, the DOTS approach emphasizes the importance of case management approach by combining the control of risk factors (Achmadi, 2008). Strengthening health systems is one of six strategies to stop tuberculosis, mentioning therein that the weakness of the information (including monitoring and evaluation), among others, the weak and the quality of vital statistics and geographic information systems for disease surveillance. For that reason, it is required tha recording and reporting system connected with national health system that can be used to analyze the problem and be able improving the performance in region (WHO, 2009).

Sukoharjo Region Health Department has developed a Community Health Center Information System which is implemented in all health centers and at this year's planned system will be developed based on the web. Sugiarsi (Undip, 2005) who developed tuberculosis surveillance information system to support the evaluation of results of activities in the Department of Health P2TB Sukoharjo. However, the system can not be used by section officers P2P and tuberculosis programs due to lack of data input is complete, the application can not renew the tuberculosis patient data and the lack of software manuals are easily understood by the officers.

Based on explanation above, researcher interested to develop the surv-tb (tuberculosis surveillans webgis) in tuberculosis program health policy. The scope of the study was limited in the Work Area Health Service Sukoharjo and implementation of the system development process is implemented to the extent tested for tuberculosis at the Public Health Service officer Sukoharjo.

METHODE

The research method used qualitative approach where the collecting data was done by interviewing the samples selected. In addition, the system development used was prototyping method system development (Marimin, 2010).

The data collected was based on secondary and primary source. The secondary data was derived from the recording and reporting the results reported in the Public Health Service of tuberculosis in Sukoharjo years 2005-2010. The primary data was obtained from interviewing to the person who are involved directly in the tuberculosis surveillance system, observation of system support and implementation of activities, review of documents related to organizational policies, standard operating activities procedures, program planning of surveillance tuberculosis and documentation system, to confirm to the officer at the health department of tuberculosis after testing the system to obtain information for repairing the information system.

The respondents was selected by purposive sample method where the sources of information were obtained from people who engaging in tuberculosis surveillance activities with those arguments related with research topics, such as head of health department in district, section heads disease control, section chief of information and health data, and tuberculosis officers. The instrument consists of interviews with Topic guidelines: identifying the need for Information Systems tuberculosis surveillance and testing of the possibility of applying the system, problems in the system, using of computers, systems of development opportunities and the desired system output, the recorder will be used to record the interview process, and documentation recording and reporting of health centers and health department regarding the completeness of data.

The method used in the development of this system was prototyping approach, namely evaluating the existing system, make definition system requirements that is new, designing systems based on identification of user needs and system developing.

Stages of defining new system requirements specify the deficiencies that exist in the system that will be constructed to be a concern for the improvement of the system built. Stages of designing a system was based on the identification of user requirements (end user) by four stages, namely firstly, Making flow chart with the method used is HIPO (Hierarchy Plus Input-Process-Output) by using the overview diagram (recapitulations diagram), making the context diagram, Data Flow Diagrams (DFD), and constructing Relationship Entity Diagram (ERD). Secondly, tee constructing of base stages in data types collection, data normalization, entity relationship creation (ERD) between tables.

Thirdly, creating of a design system based on the results of the identification of the needs of system users, including interface and manual user.

Lastly, constructing or developing the prototype of surv-tb where the data would be recorded and reported with localhost AppServer in which there are already software to design Mysql database, after the design of the database is complete and then create a menu entry with php software. Java software is also used in carrying out the planned application.

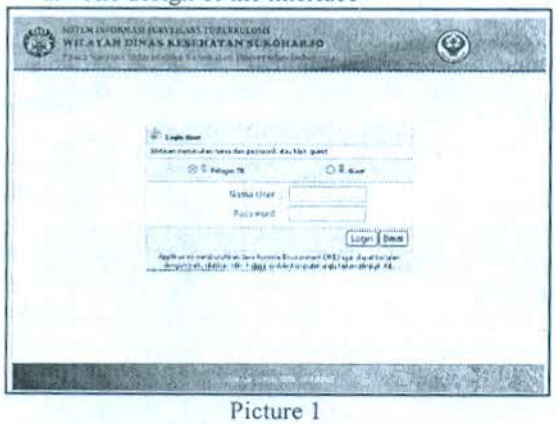
 ISBN 978-602-14930-0-7

RESULTS AND DISCUSSION

A. Results

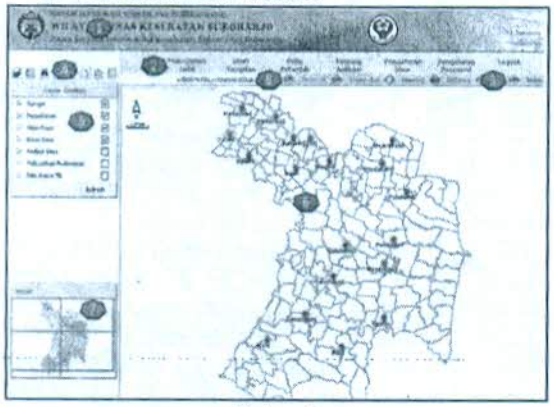
The prototype was developed with the approach of geographic information systems and web-based. Users can use the web browser of Mozilla Firefox or Internet exploler. This Development is done in the offline server (AppServ) by http://localhost/surv-tb/ address. After the user entered the address into a web browser, the user will enter the login interface where as tb officer will be required to enter his username and password while users are not guests. Tuberculosis Officers can manage the data while common user can only see the view that has been determined.

a. The design of the interface



Picture 1
Main login of surv-tb

b. The main view website



Picture 2
The main display applications Surveillance Information System

The main display pages consisting of eight items that include spatial and non spatial representation that are: 1. Header and title application, 2. The main menu which consists of data management, change display, guider book, on application,user settings, password settings and logout, 3. Navigation menu map that consists of zoom-in, zoom out, panning, distance, info and reset panels, 4. Layer control tabs, legends and tracking data, 5. Layer control, 6. Space map, 7. Inset map, 8. Instruction of pointer position coordinates on the panel where it can be shown the location of x and y which are coordinates of a point in the region.

B. Discussion

Geographic information system application in monitoring the nutritional status of children claimed processing and storage of data on systems that do not use a database can complicate the process of changing data structures (Mutalazimah, 2009). In addition, Support geographic information systems that exist in the system helps the presentation and interpretation of data (Mutalazimah, 2009). According to Guidelines Disease Surveillance Epidemiology Epidemiological Surveillance Information that the results for early vigilance Extraordinary Events should complete the epidemiological variables include the place, which can be shown by mapping the patient according to a specific area, such as urban villages. This mapping will help the Health Department conduct monitoring activities of the Local Area (PWS) (Masrochah, 2006).

Menu entries are made for easier of facilitate the officers in entering data and are able to perform updates data. Development of an input form using php programming language because it is expected to be easier to integrate with SIMPUS web-based health department that will be developed. Other inputs included in the data base is the point where the clinic (see the appendix) and Sukoharjo regency map. Compared with previously developed systems, the advantages of this system on the development tools used, the completeness of the input variables, the point of the case, updating facilities, data bases and output analysis.

The design output is being developed aims to facilitate the desired outcome picture, get a recapitulation of routine data recording and reporting forms are still limited to the registers. Speed in making the recapitulation result of surveillance/monitoring is one indicator of the performance of computer-based systems compared with conventional systems in support of management functions (Mutalazimah, 2009). Other outputs which can be carried out this application is capable of monitoring the distribution picture of tuberculosis cases in the Sukoharjo.

CONCLUSIONS

This surveillance information system is capable of supporting the monitoring of tuberculosis disease that can be used as additional references and plan health programs in Sukoharjo region. Surveillance information system is capable of accelerating the recording and reporting of tuberculosis disease during the perceived by the official is slow because the system allows online data input by each clinic or the health center. Surveillance information system generates output analysis of tuberculosis disease in non-spatial and spatial indicators. The excess of tuberculosis surveillance information system development compared to the previous information system is expected to be applied in the Public Health Service of Sukohajo.

The development of this prototype can be applied in the health department with the development of not only limited monitoring of tuberculosis but also the success of the program through other indicators. Establishment of networks with the health service in the development of tuberculosis surveillance information systems through research, training and public service.

References

Achmadi, U. F. (2008). *Manajemen Penyakit Berbasis WilayahNo Title*. Jakarta: Universitas Indonesia.

Bappenas. (2010). *Laporan Pencapaian Tujuan Pembangunan Milenium di Indonesia*. Jakarta.

Depkes. (2008). *Pedoman Nasional Penanggulangan Tuberkulosis*. (D. RI, Ed.) (Edisi 2.). Jakarta: Departemen Kesehatan RI.

Marimin, D. (2010). *Sistem Informasi Manajemen Sumber Daya Manusia*. Jakarta: Grasindo.

Masrochah, S. (2006). *Sistem Informasi Surveilans Epidemiologi sebagai Pendukung Kewaspadaan Dini Kejadian Luar Biasa (KLB) Penyakit di Dinas Kesehatan Kota Semarang*. Universitas Diponegoro.

Mutalazimah, D. (2009). Aplikasi Sistem Informasi Geografis pada Pemantauan Status Gizi Balita di Dinas Kesehatan Kabupaten Sukoharjo. *Forum Geografi*, *23*(2), 153–166.

WHO. (2009). *Global Tuberculosis Control, Surveilance, Planning, Financing*. Genewa.

 ISBN 978-602-14930-0-7